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ABSTRACT

Teaching geography as a system of inquiry to elementary and secondary students in the Alberta school system is justified in this paper, based upon the three related assumptions that geography has a structure that contributes significantly to social knowledge; has in the past often been misinterpreted; and could be an interesting part of the social studies from the student's point of view. The structure of geography is an interrelated system of values, concepts, and skills which become meaningful and useful to learners only when applied to the analysis of geographic problems. Misinterpretation of geography by curriculum makers in Alberta has probably occurred because a majority of departments stress the physical domain and fail to communicate the true nature of their subject to non-geographers, and because geographical concepts have changed over the years. The basic research traditions of geography, consisting of the physical, cultural, regional, spatial, and political, can, if properly taught, stimulate analytical and decision-making interests in students. It is concluded that the geographical method of inquiry must be taught because of the probability that such instruction will produce in students some of the analytical skills of the social scientist and will educate people to observe their environment analytically, thereby seeing the totality of a place in some comprehensible form. (SJM)

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CONTRIBUTIONS OF THE DISCIPLINE OF GEOGRAPHY TO THE SOCIAL STUDIES

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Subject matter broadly defined as geography has been taught in the schools of Alberta for more than 50 years, but this cannot be considered evidence of the worth of the subject. Precedent cannot be considered sufficient authority for inclusion of any subject in a modern curriculum and, of late, pressure for increased recognition in social studies programs has come from such disciplines as economics, anthropology and sociology. Such recognition could be at the expense of units emphasizing geography or history. Accordingly, a discussion of the contributions of geography must take the form of a defense of the subject as a worthy part of the school curriculum.

This defense of geography is based upon three related assumptions: geography has a structure that contributes importantly to social knowledge; in the past it has often been misinterpreted, badly taught and therefore misjudged; and from the student's point of view, if correctly taught it could be a useful and interesting part of the social studies.

The Structure of Geography

One seemingly obvious way of discovering the fundamental ideas and methods of the subject would be to examine definitions by leading geographers. Unfortunately, it would seem that such definitions are often

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phrased in specialized terms or are usually broad, static and rather uninteresting. The following are examples:

> Geography is a chorological science concerned with the study of the aerial differentiation of the earth's surface.[1]

> Geography is the subject that attempts to understand the earth as the world of man with particular reference to the differentiation and integration of places.[2]

While this type of definition may be meaningful to the practising geographer, it is likely to be without substance for persons without extensive experience in reading and writing geography. Probably a more straightforward kind of statement would be more useful for curriculum planners.

McNee is one of a few geographers who have explained geography in simple terms. He has suggested that "geography is what geographers share": a few key values and concepts, a research method and several basic research traditions. With some elaboration by other geographers and the writer, McNee's definition will be used in this paper.

Basic Values of Geography. McNee has stated that all geographers value comprehensive explanations, the use of maps as a means of recording and transmitting information, and direct observation as a procedure for gathering information.[3]

What implications do these values hold for the nature of geography? Probably the geographer's preference for comprehensive explanations is the value that most clearly distinguishes geography from the other sciences. Most scientists specialize in the study of one particular class of phenomena: animals, plants, social or political behaviour and the like. Geographers, like historians, prefer to study wholes. The essential difference between

history and geography is that the historian studies things unified by their occurrence in a given period of time, while the geographer studies things unified by their occurrence in a given place. In short, as the historian studies periods, the geographer studies places.

Because this interest in comprehensive explanations leads geographers to express integrated or synthesized conclusions, probably more often than most other social sciences, geography has been criticized as a subject that attempts too much for it to be truly "scientific". Broek justifies this interest as follows:

> . . . in an age of evermore specialized research is there a place for a discipline that insists upon taking a comprehensive view of earth and man? Our obviously biased answer is: there is indeed. Perhaps geography is bucking the spirit of the time, but its way of looking at the world counterbalances artificial partitions. The greater the fragmentation of knowledge, the more need there is for putting the bits together again in an orderly way to understand the reality of places.[4]

The remaining basic values have led geographers to develop distinctive research skills. Constant attention to maps and mapping has led geographers to perfect the technique. In recent years geographers have used aerial photographic and statistical techniques to produce maps that depict selected information with precision and clarity. Similarly, a concern for effective field work has led geographers to develop dependable and sophisticated techniques of field observation and recording.

Basic Concepts of Geography. McNee has also listed what he considers to be the most important concepts shared by geographers. Unfortunately, he has not fully defined these concepts. That is, he has stated that they hold together the "whole system of geographic thinking" and provide a "key to the geographer's way";[5] but he has failed to give an explicit statement of their defining attributes.

What are the basic concepts of geography? Few geographers have given a simple or straightforward answer to this question. Broek is one who has. He has provided a list of concepts that is similar to McNee's, but has also specified some of their attributes and functions. For example, he has defined: a regional concept, an hypothesis that areas may be delimited in terms of some kind of internal homogeneity and thus can be studied as units; an aerial association concept, an hypothesis that features exist together in some coherent form of organization and therefore can be comprehended; a spatial interaction concept, an hypothesis that relationships between regions and within regions can be differentiated and meaningfully studied; and a concept of change, an hypothesis that change has regularity, rate and direction and thus can be comprehended and measured.[6]

What sort of concepts are these? Most importantly, they are hypothetical and very abstract. They do not refer to observable features of relationships but are mental constructs that enable geographers to comprehend patterns that are too complex, scattered over time and space, or intangible, to experience in any concrete form. Because such concepts are so abstract, geographers do not accept them as established facts, but as hypotheses that must constantly be tested. One might call such concepts "syntactical" or "analytical" because they underlie the system of inquiry of geography.

Further, these concepts are very inclusive and general. They are not exemplified by any single feature alone; rather they subsume broad classes of features. They are relational in character; being defined in terms of relative position, intensity or direction; and finally, they are disjunctive. They do not have specific attributes present in the same form in all exemplars.

Clearly the basic concepts of geography are markedly different from the sorts of concepts teachers have been accustomed to teaching. Concepts commonly taught in geography courses in the schools have usually been relatively concrete and specific. For example, a concept of "farming in Canada" might be defined by such generalization as:

1. Canadian farming settlements are dispersed in pattern.
2. Transportation of large quantities of goods over long distances is common in Canadian farming.
3. Wheat is the most important single crop for export from Canada.[7]

On the other hand the following generalization defining the concept of region is illustrative of how the basic concepts of geography are fundamentally different:

> Every region is an area homogeneous in terms of specific criteria chosen to delimit it from other regions. This delimitation is always based on an intellectual judgement.[8]

One might question whether such concepts are sufficiently related to reality to be relevant to the pragmatic central purpose of the social studies, the education of rational decision-making citizens.

The Method of Geography. McNee has stated that geographers share a distinctive research method. He has described the method as an extension of the basic values and concepts of the discipline. On the one hand, the values determine the problems that geographers study and the research tools they use, while the concepts enable geographers to simplify complex associations and hypothesize explanations of how relationships occur in a place. On the other hand, geographers use the method to test the validity of the basic values and concepts.

What are the essential characteristics of the geographic method?

Again McNee has not elaborated upon his theory. However, Ackerman has provided a statement that can be used because it is generally accepted and relatively concise. It is as follows: First, geographers locate the place to be studied. This entails a precise description of the position of features in the place as they relate to known positions. In turn they require exact measurements and a statement of mathematical coordinates; second, geographers identify specific features in a place; third, geographers differentiate between and classify relationships; fourth, geographers identify dynamic processes that are likely to bring change; fifth, geographers determine covariation among features. This refers to what the layman might call "cause and effect" but means something far more limited and specific to the geographer; sixth, geographers integrate these observations to produce a description of the "character" of the place studied. Essentially, the description of character entails a statement of the distinctive features and relationships in the place.[9]

Substantive Concepts and Geography. McNee has suggested that the foregoing values, concepts and methods are the basic components of geography; in Brunerian terms, the unifying "structure" of the subject. But these are not the only unifying elements of the discipline. McNee has suggested that geography is further unified by less central, but still widely shared, concepts.[10] These seem to be of at least two types: concepts borrowed from the systematic disciplines; and, concepts invented by geographers. Both types enable geographers to recognize and classify the substantive elements of geography.

"Borrowed" concepts are taken primarily from biology, geology and the social sciences. Such concepts enable geographers to identify and explain

specific features and are thus vital to the second and third steps in geographic research. Because geography is a broad field the list of such concepts used at one time or another in the discipline is very extensive.

Substantive concepts invented by geographers tend to be of two sorts, systematic and regional. Systematic concepts in geography classify widespread features and processes that have been extensively studied from the geographic point of view. Regional concepts do not refer to the "concept of region" but to knowledge of the distinctive attributes of specific places that have been designated by geographers as regions.

Why not consider such concepts a part of the structure of geography? Probably because they are so subject to change and so numerous. Geographers study a world in flux. While they assume short term permanence of persistence in nature and society they are constantly aware of the likelihood of continued change. Concepts about specific places or widespread features are thus of only short term relevance. Further, geographers study a wide range of phenomena. They cannot possibly hold all of the substantive concepts of geography in common.

Broek's simple characterization of geography may sum up the place of substantive concepts in geography.

> Geography provides meaningful insights concerning the earth as the human habitat. It is a way of looking at the earth, <u>not an inventory of its contents</u>.*[11]

<u>Geography Misunderstood</u>

The second major element in a defense of geography is that it has probably been misjudged by curriculum makers in Alberta and deserves

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*Underlining added by the writer.

reconsideration.

Figure 1 may help to show how such misunderstandings have occurred. It represents the writer's understanding of the current emphasis in geographic research in Anglo-America and Great Britain.

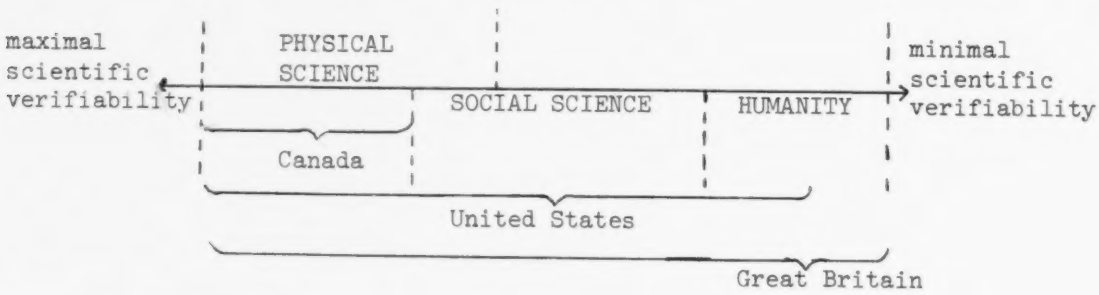

FIGURE 1

CURRENT EMPHASIS IN GEOGRAPHY IN CANADA
THE UNITED STATES AND GREAT BRITAIN

The diagram shows three aspects of geography distributed along a continuum of scientific verifiability. According to this diagram the part of geography that approaches the physical sciences in method and content achieves conclusions that are maximally verifiable in scientific terms. On the other hand, geographic conclusions in the social science domain seemingly are less easy to verify. In relatively recent years, however, many modern "social science" geographers have taken to applying methods of research similar to those of the physical scientist. Such methods are commonly called "quantitative." Researchers endeavour to measure exactly the extent of aerial association between phenomena. Conclusions are stated in carefully qualified terms and sometimes approach those of the physical sciences in reliability.

Further, it would seem that one aspect of geography is essentially humanistic. Broek has written a clear summary of the basic attributes of

this side of geography.

> The humanists stress real persons and cases rather than models, quality rather than quantity, evaluation and evocation rather than observation, beauty and wisdom rather than information. Geography shares these attitudes to some extent. By tradition it takes a keen interest in the individuality of places, treasures the esthetic values of the landscape, and recognizes there are more things between heaven and earth than can be safely entrusted to a computer. The human aspect of geography is especially evident in the way it communicates with the lay audience, including the schools.[12]

As previously noted, the diagram also shows the current emphasis in geography in three countries, Canada, the United States and Britain. That is, the brackets roughly indicate the research interest in the majority of geographers in those countries.

The major reasons for including this diagram in this paper are to explain the broad character of geography writing and research and the inadequacy of interpretations of the nature of geography based upon associations with local geographers who are interested primarily in one aspect of the subject.

The danger of teachers thus misinterpreting the subject may be especially great in Canada. Although all Canadian geography departments teach courses in most, if not all, aspects of the subject, a majority stress research in the physical domain.

The history of geography teaching and research is also relevant to a consideration of how geography has been misinterpreted. First the initial course in geography in Canadian universities has traditionally been in physical geography. Largely because general courses in education have often encouraged the student to sample several courses, this has often been the only course in geography studied by teachers.

Second, until very recently, geographers have failed to communicate the true nature of their subject to non-geographers.[13] As previously noted, definitions have been worded in specialized and unappealing terms. One outcome of the resulting confusion among teachers inadequately trained in the subject has been a tendency to teach geography as a collection of static substantive concepts rather than as an objective way of looking at the earth.

Third, some of the fundamental concepts of geography have changed over the years. The influence of Ellen Churchill Semple is an important case in point. Miss Semple was an American geographer who published and lectured widely in the early 1900's. Like many geographers of her time she oversimplified and overemphasized the influence of the physical environment upon man. This approach is called "environmental determinism"; it is still found in curricula that call upon teachers to prejudge cause and effect by emphasizing "how men adapt to their environment." Geography thus taught cannot exemplify objective research.

Unfortunately, many curriculum makers are still drawn to environmental determinism and physical geography, probably for at least two reasons: the content seems relatively straightforward; narrow or outdated interpretations of the subject are prevelant among local educators.

Thus, even though these concepts are not geographic, scientific or scholarly they are often used to define geography in curriculum guides and in classrooms.

It goes without saying, presumably, that such misinterpretations have been instrumental in leading to "bad teaching" of geography. Seemingly geography taught as a list of pre-conceived nature-man relationships

cannot evoke honest or rigorous inquiry. Geography presented as an inventory of static substantive concepts, mainly physical and locational, cannot earn the respect of serious students.

The Basic Research Traditions of Geography. Finally, McNee has listed a cluster of basic research traditions that probably have existed since beginnings of geographic inquiry in ancient Greece.

1. Physical geography, or geography or earth science; the arrangement and functioning of natural things on the surface of the earth.

2. Cultural, or ecological geography; the relationship between man and his environment.

3. Regional geography, or area studies: what a given place is like as a totality.

4. Spatial geography, or location theory; the geometry of the earth's surface; why things are arranged as they are and why there are differences in densities, dispersions and patterns.

5. Political geography; how the political system impresses itself on the landscape.

McNee has not been explicit as to whether he believes that these research emphases are part of the structure of geography; he only states that each should be studied to communicate an important part of "the geographer's way."

Probably these research traditions are not structural in the accepted meaning of the word. That is, they are not the basic concepts, values and methods of the subject in themselves; rather each offers outstanding examples of applications of these fundamental things. If this is so, at least one implication for the teaching of geography is clear. Aspects of each research tradition should be taught in order to provide examples of the basic elements of geography.

Teaching Geography

The foregoing account leads to the conclusion that the geographical method of inquiry must be taught if the schools are to teach geography. In short, it has been argued that the structure of geography is contained in an interrelated system of values, concepts and skills which become meaningful and useful to learners only when applied to the analysis of geographic problems.

Justification for Teaching the Method of Geography. But can geography taught as a method of inquiry be justified as a part of the social studies? There are at least two reasons for suggesting that it can.

In the first place it is probable that instruction in geographic inquiry could teach some of the analytical skills of the social scientist. Admittedly this can be claimed for the teaching of any social science; but geography may offer unique advantages for the schools. Evidence for geographic inquiry is accessible to children of all ages. Abundant evidence can be found within walking distance of any school. School buses can be used to make traverse field trips to contrasting areas. Aerial photographs, topographic maps and sample study source books can provide detailed and relatively concrete evidence for inquiry into distant places.

Further, as previously noted, probably geography is the only social science that insists upon taking a comprehensive view of modern earth and man; thus, geographic inquiry requires synthesis. Ideally a social studies course should provide the concepts of intellectual skills that would give students the capacity to comprehend meaning, purpose and predictability in social behaviour. Probably the ability to synthesize the disparate elements in a place into coherent patterns of relationships is required for the

resolution of many social problems. If this is true, and if it can be established that children can learn to think in the manner of geographers, an important place for the teaching of the geographic method in the schools would be firmly established.

Unfortunately, it seems that there is little research evidence to confirm or deny these things. This places curriculum makers who must decide upon programs for today in a difficult position. Perhaps the best that they can do is to encourage or carry out research, and in the meantime act upon hypotheses that seem convincing.

The following ideas are presented in this spirit. They summarize the writer's reasons for suggesting programs based upon the assumption that school children in all grades are capable of "thinking geographically." In the first place, possibly most elementary school children are capable of simple, but intellectually honest, forms of geographic inquiry. The following sorts of teaching techniques are recommended in such texts dealing with the teaching of geographic inquiry as Roberson and Long[14]: the child's community, a nearby farm or factory studied to provide concrete evidence of the character of a place; distant regions sampled through the study of small cases presented in the form of photographs, maps, charts and straightforward verbal accounts. Such studies could emphasize direct comparisons of the "home area" to "distant areas", and if the content was relatively lacking in complexity perhaps even the youngest school children might be capable of reaching geographic conclusions.

The writer does not accept these suggestions simply because they are recommendations of so-called authorities in the field of geography methods. He has tried them himself and worked with many teachers who have tried them.

The evidence of success seemed convincing enough to suggest that such procedures should be used until, if ever, better ways are found.

A conscious knowledge of the formal rules of geographical inquiry may be within the grasp of most secondary school students. The capacity of such students to use relatively complex forms of inductive logic in history has been demonstrated by Fenton. What about the capacity of high school children to understand the new quantitative method and theoretical approaches in geography? Probably most high school students could comprehend and use some of the statistical devices. As to the theory of geography, high school teachers are accustomed to using demonstration and expository techniques to explain theoretical models. The theoretical spacing of service centres would appear to be as comprehensible to the high school student as most theories taught in physics or mathematics programs. At the very least such procedures and models could be taught to make students aware of the limitations of the potential of some modern techniques in the social sciences.

The second major justification for geography is that it seems capable of educating people to make rewarding use of leisure time. Trends toward longer holidays, earlier retirement and increased travel suggest a need for more of this kind of education. Unfortunately, as in the preceding case, educators do not yet appear to have the conceptual tools or the research evidence to analyse scientifically or evaluate the process of "appreciating an environment." The most that can be claimed is that geography seems designed to educate people to observe their environment and to provide the analytical skills to see the totality of a place in some comprehensible form; and that students of geography testify that geography has increased their enjoyment of environment.

What of the overarching methodological approaches that might be used to teach geography as inquiry? Because it is not the purpose of this paper to focus upon methodology, this question will not be considered. It is suggested that the reader examine the extensive writing on reflective thinking, inquiry, discovery or inductive thinking. Two references are recommended, by Massialas[15] and Shulman[16]. Both texts describe general methods of inquiry that seem worth trying in the schools.

Teaching Selected Substantive Concepts in Geography. Although the teaching emphasis in geography should be upon its structural components, some of the substantive concepts that geographers use and invent in studying specific places should be taught in the social studies. This is so because it is not possible to identify the features of a place or hypothesize relationships between those features unless one has the appropriate specific concepts. Accordingly any geography program must be taught along with the teaching of a selected set of objective concepts illuminating such aspects of place as vegetation, climate, economic situation or level of technology.

In addition the fundamental "methodological concept" of geography cannot be taught without reference to specific places that provide examples of them. A meaningful concept of "region" must be based upon concepts of the characteristics of real regions. A concept of "change" must be exemplified by knowledge of how change has occurred in real places. Therefore, curriculum makers must choose subject matter from which children may discover applications of the fundamental concepts of geography.

Finally, although geographers cannot formulate lasting principles, many of their generalizations may be of short-term utility to decision makers. For example, urban geographers study the nature of cities employing such

concepts as location, circulation, interaction and accessibility; as well as distribution and movement of population. The impact of rapid technological, social and economic changes upon urban settlement is examined. Cities in North America and Western Europe have employed urban geographers to plan solutions to such problems as urban sprawl, residential blight, air pollution, traffic congestion or changing employment patterns. A second example is that of economic geographers who consider places in relation to relatively predictable economic processes and are thus often able to suggest the probable outcomes of trends toward centralization, commercialization, mechanization or specialization.

It seems especially evident that urban geography should not be ignored in the schools. This is the case in Alberta today. In the next few years citizens in Edmonton and Calgary must make decisions that could determine whether or not those cities will be safe, convenient and attractive places in which to live. Probably within the next 30 to 40 years over 90% of the population of Alberta will live in large to medium sized urban centres. Citizens in our two largest cities will face the problems attending settlements approaching 1,000,000 in population.

It must be noted, however, that generalizations made by geographers are most useful only if they are carefully defined in relation to the cultures and economies to which they apply and are learned in the context of the geographic method. For over 100 years geographers have recorded generalizations of much of the earth. Obviously only a fraction can, or should, be taught. Curriculum makers must decide which are most significant. In a society of rapid and continuous change, contemporary generalizations that relate to the critical problems of society are the most likely to hold

utility. Generalizations about, for example, urbanizations in the United States cannot be applied to India where many of the characteristics of urban organization differ markedly. Most important, geographic generalizations are bound to be poorly understood or improperly applied to understanding current problems if they are learned apart from geographic method.

Summary

In summary, geography must be taught as a system of inquiry. If this is done properly the discipline can make a significant contribution to the primary goal of the social studies, the education of rational decision-making citizens. A proper course in geographic inquiry must have at least the following basic parts: frequent opportunities for students to inquire for themselves and to study examples of inquiry by geographers; training in the basic skills of interpreting geographic source materials as well as in applying the theoretical models of geography; and content that is contemporary, relates to critical issues and exemplifies the fundamental concepts of geography.

FOOTNOTES

[1]Richard Hartshorne, The Nature of Geography, (Lancaster, Pa.: Association of American Geographers, 1939) pp. 130-148.

[2]Jan O. M. Broek, Geography: Its Scope and Spirit, (Columbus, Ohio: Charles E. Merrill Books, 1965) p. 79.

[3]Robert McNee, "An Approach to Understanding the Current Structure of Geography." Concepts and Structure in the New Social Science Curricula (Lafayette, Indiana: Social Science Education Consortium Inc., 1966, Irving Morrisset, Ed.) pp. 59-60.

[4]Broek, op. cit., p. 4.

[5]McNee, op. cit., p. 60.

[6]Broek, op. cit., pp. 70-72.

[7]Broek, op. cit., p. 98.

[8]See Schwabb - for discussion of the syntax and substance of discipline.

[9]Edward A. Ackerman.

[10]McNee, op. cit., p. 60.

[11]Broek, op. cit., p. 72.

[12]Broek, op. cit., p. 22.

[13]Broek, op. cit., author's preface, p. IX, for a discussion of this problem.

[14]M. Long and B. S. Roberson, Teaching Geography, (Don Mills, Ontario: Bellhaven, 1966).

[15]Byron G. Massialas and C. Benjamin Cox, Inquiry in the Social Studies, (Toronto: McGraw-Hill, 1966).

[16]Lee S. Shulman and Evan R. Keislar (Ed.), Learning by Discovery, (Chicago: Rand McNally, 1966)